

chemical reagents disposed at known spatial locations within a chamber 20 to colorimetrically relate information concerning the specific gravity, pH, glucose, and ketones within the urine sample after a given period of time, and physical characteristics of the chamber 20 at known spatial locations that enable detection, evaluation, and/or enumeration of particles within the urine sample. The physical characteristics of the chamber 20 may, for example, be similar to those described above for the evaluation of WBC's where a plurality of regions of different through-plane thickness 78 may be accessed iteratively to provide optimum results.

The Programmable Analyzer 16 directs the rod 90 within the Reader Module 12 to actuate the valve 26 within the container 18 and thereby release the sample and colorant mixture into the chamber(s) 20. The analysis algorithm stored within the Programmable Analyzer 16 starts an internal timer when the sample is released into the chamber(s) 20, and the chemical analysis is performed at some time thereafter. Using the analysis algorithm for urinalysis, the Programmable Analyzer 16 positions the appropriate SE or LSE filters 58,66, if any, within the path of the light beam 54 within the field illuminator 40, and the light beam 54 selectively produced from the light source 44 and filtered within the field illuminator 40 is directed into a sample field quiescently residing within the chamber 20. The light emitted from the colorant within the sample passes back through the field illuminator 40 and into the image dissector 42 where it is converted into an electronic format in real time. The remaining analyses associated with a urinalysis may be performed in a second chamber or in a contiguous region of the same chamber 20. A more complete description of the performance of urine analysis using this apparatus 10 may be found in United States Patent No. 6,004,821.

Although this invention has been shown and described with respect to the detailed embodiments thereof, it will be understood by those skilled in the art that various changes in form and detail thereof may be made without departing from the spirit and the scope of the invention. For example, the best mode of the apparatus 10 is described as being used with a particular sample container 18. Alternative containers may be used with the present invention apparatus. In addition, the field illuminator is described as having a light diverting prism 60

and a plurality of lens' 52, 56, and 67. Different filter positions, or no filters at all, may increase or eliminate the need for certain light diverting prisms and lens'.

What is claimed is:

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